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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,011	01/17/2001	Kevin W. Burrows	206584	3590

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EXAMINER
FILIPCZYK, MARCIN R

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/764,011	BURROWS ET AL.1	
	Examiner	Art Unit	
	Marc R Filipczyk	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/1/04 and RCE on 7/28/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-19 and 21-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-19 and 21-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to Applicant's RCE request of July 28, 2004 and amendment filed on June 1, 2004.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 28, 2004 has been entered.

Claims 1-5, 7-19 and 21-66 remain for examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-5, 7-19 and 21-66 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth whether the invention is within the technological arts.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences,

for example) and therefore are found to be non-statutory subject matter. For a method claim to pass muster, the recited steps must somehow apply, involve, use, or advance the technological arts.

In the present case, independent claim 1 only recites an abstract idea. The recited steps of merely obtaining a median element do not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. These steps only constitute an idea of how to select a median.

Since the claimed invention, as a whole, is not within the technological arts as explained above, claim 1 and claims 2-5, 7-19 and 21-66 which depend from claim 1 or contain similar subject matter as claim 1, are deemed to be directed to non-statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 7-19 and 21-66 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claim 1 contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The use and definition of the term "median" and the algorithm used for obtaining the median to build a binary tree was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention.

Regarding claims 2-5, 7-19 and 21-66 depend from claim 1 or contain similar subject matter as claim 1 and are rejected on the same basis.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5, 7-19 and 21-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the term "median" is indefinite. It is not clear if the term is used as a middle value of a list or a middle value of an ordered/sorted list, or something else. Further it is not clear how a binary tree is inserted from the median.

Regarding claims 2-5, 7-19 and 21-66 depend from claim 1 or contain similar subject matter as claim 1 and are rejected on the same basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7-19 and 21-66 are rejected under 35 U.S.C. 103(a) as best as Examiner is able to ascertain as being unpatentable over "INTRODUCTION TO ALGORITHMS" by

Cormen, Leiserson and Rrivest (hereinafter "CLR") in view of "Indexing Large Metric Spaces for Similarity Search Queries" by Bozkaya and Tolga (hereinafter "BT").

Regarding claims 1-5, 7-19 and 21-66, CLR discloses creating and searching (page 388, CLR) a balanced binary tree using nodes and assigning values (page 386, fig. 19.4, CLR), but does not expressly teach a method for creating a binary tree from a list of elements, wherein the list includes left and right side groupings.

(Note: creating a binary balanced tree involves inserting left and right descendent nodes)

However, BT teaches indexing large metric spaces for similarity search queries (title, BT) in which a binary vp-tree is constructed (binary trees) by subdividing a list into two lists of equal cardinality at the median (pages 6 and 7, section 3.3). BT also teaches breaking up the two lists and forming an additional median (page 10, 3.8 and 3.9, BT).

(Note: binary vp-tree is introduced as a binary tree, see page 5, BT)

Further, selecting a side for processing, where for example left side groupings are in preference to right side groupings was a common programming technique before the Applicant's claimed invention. Hence, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to create binary tree structures by reading and subdividing the list by use of a median as taught by BT to effectively construct a tree structure including all the elements in the list.

(Note: elements in a list may represent data of any type i.e. logged events)

Response to Amendment

Applicant's arguments filed on June 1, 2004 have been fully considered but they are not persuasive. The arguments and responses are listed below.

Applicant argues on pages 2 and 3 of the 6/1/04 response, that the claims are directed to a process for creating binary tree data structures and that it is physically impossible for a data structure to be created in the mind of a user.

Examiner disagrees. The features of claim 1 could be created in the mind of a user by use of a pencil and paper if the claims were enabling by taking a list, finding the list's median (middle value) and inserting the median in a binary tree that consists of 0's and 1's, and so on as claimed. Note, data structures not claimed as embodied in computer-readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory).

Applicant argues on pages 3 and 4 of the 6/1/04 response that the combination of Cormen and Bozkaya (CLR and BT, respectively) fails to teach or suggest every limitation of the claims, and that Bozkaya picking C as the root and not B as required by the invention generates a different result and such reasoning is contrary to the principle that every limitation must be taught or suggested, and even if Bozkaya would choose B as the median the outcome would still differ.

Examiner disagrees. The response by the Examiner to Applicant's 3/18/04 argument is as follows:

Applicant argues on page 28 of the 3/18/2004 response, that given a list of three elements A, B, and C, using BT's (prior art) iteration, C can be chosen as the arbitrary top node (root node), but according to the recited claims, element B must be chosen as the root node. Further, BT requires calculation of distances or median, contrary to the method of the present invention.

In response to Applicant's arguments, Examiner agrees. While it is true that BT may select C to be the root node, BT may also select element B to be the root node. Note, BT's system uses a method of reading a list of elements of a set to account for the total number of elements in that set, call it "cardinality" (pages 7 and 10), and selects an "arbitrary element" as a starting element of the set S, then using the cardinality BT notes the most distant element from the arbitrary element and based on these two elements, the size of the set is obtained and a median is selected (pages 7 and 10). Thus, BT's system is not limited to a given order of elements in a set (list), but instead may choose any element as a starting point to generate a B-tree. Further, the calculation involved in BT is specific to the list itself and is not needed to obtain a median.

Cormen in view of Bozkaya teach every element in the claims as best as the Examiner is able to ascertain that which is claimed. Since the claims read "comprising" and not "consisting of", the claimed language is open ended and subject to additional calculations as performed by Cormen in view of Bozkaya. Further, after carefully reviewing the independent claims, specifically claim 1 and choosing several possible definitions of a median and selecting a "5" as a median from the example on page 4 of the 6/1/04 response, Examiner has concluded that the claimed steps do not generate that which is argued and presented by the Applicant in the example on page 4 of the 6/1/04 response. Further, the claimed steps do not generate a complete binary tree structure, as such, enablement rejections are made.

With respect to all the pending claims 1-5, 7-19 and 21-66, Examiner respectfully traverses Applicant's assertion based on the discussion and rejections cited above.

Conclusion

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R Filipczyk whose telephone number is (571) 272-4019. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MF
December 7, 2004

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